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CHARLES ELMORE CROPLEY
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IN THE

Supreme Court of the United States

STATE OF WISCONSIN, STATE OF MINNESOTA, STATE OF OHIO, and STATE OF PENNSYLVANIA, *Complainants,* *vs.* STATE OF ILLINOIS and THE SANITARY DISTRICT OF CHICAGO, *Defendants.* STATE OF MISSOURI, STATE OF KENTUCKY, STATE OF TENNESSEE, STATE OF LOUISIANA, STATE OF MISSISSIPPI, and STATE OF ARKANSAS, *Intervening Defendants.*	No. 5, Original.
STATE OF MICHIGAN, *Complainant,* *vs.* STATE OF ILLINOIS and THE SANITARY DISTRICT OF CHICAGO, et al., *Defendants.*	No. 7, Original.
STATE OF NEW YORK, *Complainant,* *vs.* STATE OF ILLINOIS and THE SANITARY DISTRICT OF CHICAGO, et al., *Defendants.*	No. 8, Original.

SEMI-ANNUAL REPORT OF THE SANITARY DISTRICT OF CHICAGO OF JULY 1, 1933, MADE PURSUANT TO DECREE OF APRIL 21, 1930.

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NOS. 5, 8 AND 9, ORIGINAL.

OCTOBER TERM, 1932.

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SEMI-ANNUAL REPORT OF THE SANITARY DISTRICT OF CHICAGO OF JULY 1, 1933, MADE PURSUANT TO DECREE OF APRIL 21, 1930.

Pursuant to provisions of paragraph numbered 5 of the Decree in the above entitled causes, entered on April 21, 1930, the Defendant, The Sanitary District of Chicago, hereby makes its semi-annual report of July 1, 1933, as follows:

CONSTRUCTION PROGRAM.

In the semi-annual report of January 1, 1933, the status of completed work in the sewage treatment construction program involved in this case was stated to be on December 1, 1932, as follows:

TABLE 1.

COMPLETED WORK AS OF DECEMBER 1, 1932.

Calumet Project	$ 20,862,134.96
North Side Project	37,101,223.42
West Side Project	41,653,836.95
Southwest Side Project	277,611.18
Miscellaneous Plants and Sewers	596,188.86
Chicago River Controlling Works	53,415.74
Total	$100,544,411.11

In this same semi-annual report the future work after December 1, 1932 (Table 5, page 11, report January 1, 1933) was estimated to cost $154,350,500.00 without consideration of a possible saving of $9,775,000.00 if dewatering and incineration for the disposal of sludge proved feasible and was adopted. (Page 12, report January 1, 1933). If this saving had been deducted, the estimate of cost of future work after December 1, 1932 would have been $144,575,500.00. It has now been definitely decided, by action of the Board of Trustees of The Sanitary District of Chicago on June 15, 1933, to adopt this process for the disposal of sludge.

In the hearings of this case before Special Master Edward F. McClennen, under the order of reference of the Supreme Court of December 19, 1932, the Sanitary District submitted, as of February 1, 1933, an estimate of future work in the amount of $138,575,500.00. This estimate is just $6,000,000.00 lower

than the $144,575,500.00 mentioned in the preceding paragraph and was derived by reducing the figure for "Miscellaneous Plants and Sewers" (a contingent item) from $8,000,000.00 to $2,000,000.00 These matters are discussed on page 62 of the report of Special Master McClennen to the Supreme Court on March 13, 1933.

During the interim of six months between the date of the last report and the present report, very little actual construction work has been accomplished. Work has been prosecuted diligently on the design of the Calumet, the West Side and the Southwest Side Projects. The design force was practically doubled in March and April, 1933, in order that plans and specifications could be ready for a considerable amount of construction work in the event that financing could be arranged for the construction season of 1933.

Calumet Project. Construction work on the Calumet Pumping Station and Blower House and on the Aeration Tanks, Operating Galleries and Final Settling Tanks has been discontinued since December, 1931, because of the inability of the Sanitary District to pay the Contractors, as indicated in the last report to the Court. The manufacturing of pumps, pump motors and large valves has been completed and this machinery is in storage. The fabrication of blowers and blower motors is about 40 per cent completed. None of this machinery work has been paid for. Plans are practically completed for the Harvey sewer, the California Avenue outlet sewer, the Evergreen Park sewer and for the sewer in South Park Avenue. These sewers are estimated to cost about

$3,400,000. Delay by the City of Chicago on certain sewer construction precedent to the construction of the South Park Avenue sewer will postpone the letting of this contract (estimated at $1,380,000) probably until 1935.

Plans are being prepared for preliminary settling tanks, sludge concentration tanks, screens, meter vault, sewage conduits, etc., for the Calumet Treatment Works. This work can be ready for advertising for bids before the end of the summer of 1933. Plans are also in preparation for the sludge dewatering and incinerating plant for the Calumet Works. It is contemplated that this contract will be let in the spring of 1934. Preliminary plans have been made for the conduit connecting the old Calumet Pumping Station with the new. Final plans for this structure will be made by 1934. These three contracts with the work now under contract will complete the Calumet Works, except for roads, grading, lighting, etc.

West Side Project. Construction work on the third battery of Imhoff tanks and on Contract Sections 3 and 4, of the West Side sewer, has also been discontinued since December, 1931, because of lack of funds. Plans have been completed for Contract Sections 5, 6 and 7 of the West Side sewer, and plans are being prepared for Sections 8, 9 and 10 of this sewer, so that contracts for these can be let before the end of 1933. Sections 5, 6 and 7 are estimated to cost about $3,500,000.00 and Sections 8, 9 and 10 about $2,600,000.00. This work will complete the West Side intercepting sewer, except for some minor branches.

The operation of the sludge filtering and drying unit at the West Side Works since August, 1932, has demonstrated the feasibility of dewatering and incineration for the disposal of sludge. Plans are ready and bids will be taken in the near future for an addition to this unit which will be used to further develop the process. This process, by eliminating any further construction of digestion tanks and sludge drying beds saves so much space that it has become possible to build the entire Southwest Side Sewage Treatment Works on a portion of the West Side site already owned by the Sanitary District. This arrangement will also result in considerable saving in construction costs and in time of construction.

Work has been started on the preparation of contract plans for aeration tanks, operating galleries, final settling tanks and the necessary conduits for the activated sludge portion of the West Side Treatment Works. The first contract, or contracts, will be for sufficient plant to handle 600 m.g.d. average flow of sewage. This is a plant about three times the capacity of the North Side Works. Work has also been started on plans for the blower house and sludge return pumping station for the combined West Side and Southwest Side activated sludge plant.

Southwest Side Project. As stated in the last semi-annual report, the studies indicated that the Southwest Side Works might be constructed on a portion of the land acquired for the extension of the West Side Works. This procedure was contingent on the practicability of dewatering and incineration for the disposal of sludge. Further

development of this process gave further proof of its feasibility and it has now been definitely decided to place the Southwest Side Plant on a portion of the West Side site and to combine the activated sludge portions of the two plants. The Board of Trustees of the Sanitary District, on June 15, 1933, officially adopted this procedure. The Southwest Side treatment plant thus is reduced to a sewage pumping station, screening plant and preliminary settling tanks, from which the fresh sludge will be taken to the dewatering and incinerating plant and the effluent to the activated sludge plant, both of the combined West-Southwest Side activated sludge plant.

Work has been started on the plans of the new Southwest Side sewage pumping station. This will be constructed of sufficient capacity that, in connection with the West Side pumping station with which it will be connected by a suitable bypass, it can pump at least 150 per cent of the average dry weather flow of sewage.

A definite conclusion as to the quantity of wastes from the Stockyards and Packingtown to be handled at this plant has been made, using the results of the tests made on the Stockyards sewers mentioned in previous semi-annual reports to the Court. The suit entitled "The Sanitary District of Chicago vs. Swift & Company, et al," in the United States District Court, Northern District of Illinois, (No. 3840) is still pending but the trial of this case has no further bearing on the design or construction of the Southwest Side Treatment Works.

ACTIVATED SLUDGE PATENT SUIT:

The Sanitary District of Chicago has been defending a patent suit brought on September 19, 1924, by Edgar C. Guthard and Activated Sludge Limited, in the United States District Court, the Northern District of Illinois, Eastern Division (In Equity No. 4280). In 1928, Activated Sludge, Inc., of Delaware, became an additional plaintiff. The plaintiffs claim infringement of United States patents issue to Walter Jones, Nos. 1,247,540; 1,247,542; Reissue No. 15,140; 1,282,587; 1,286,017; and 1,341,561. The validity of these 6 patents is in question. The plaintiffs assert all the activated sludge plants of the District infringe. The suit came to trial on May 17, 1932, before Judge Walter C. Lindley. Both sides rested on June 8, 1933. Argument is set for October 24, 1933.

Recently a suit brought against Milwaukee under the first four of the patents mentioned was decided for the plaintiffs, Activated Sludge, Inc., by Judge Geiger (Activated Sludge, Inc. vs. The City of Milwaukee, in Equity No. 2323, Eastern District of Wisconsin). Appeal has been taken.

This suit against the Sanitary District is mentioned herein so that the Court may be advised of another element which tends to obstruct progress and may (if the patents are upheld) increase the cost of the works.

Financial. The financial condition of The Sanitary District of Chicago has been thoroughly discussed in the last three semi-annual reports to the Supreme Court and in the report of Special Master McClen-

nen of March 13, 1933. No further comments as to the reasons for this financial crisis are deemed necessary at this time.

The order of the Supreme Court of May 22, 1933, enlarging the decree of April 21, 1933, and requiring the State of Illinois to take the necessary steps to secure the completion of adequate sewage treatment works and sewers has led the Sanitary District officials to believe that adequate finances would become available soon and tentative plans have been made for a resumption of actual construction work, interrupted since December, 1931.

The designing force has been practically doubled since March, 1933. Work on plans and specifications is being vigorously pushed. About $8,600,000 of work is under contract and can be resumed as soon as finances are available. Plans are ready on about $7,000,000 more of work and plans will be ready on about $2,500,000 additional of work before the end of the current year. Plans are under way on approximately $15,000,000 of work on the activated sludge plant for the West-Southwest Side Sewage Treatment Plant, and should be ready for contract work to start there in the spring of 1934.

The local tax situation is improving, due to the passage of certain acts by the Illinois Legislature (now in session) under which payments of taxes on income producing property can be forced. The amounts of taxes levied by the Sanitary District for the years 1928, 1929, 1930 and 1931, and the amounts received by the Sanitary District from the County

Collector up to June 16, 1933, pursuant to these levies, are as follows:

Year	Total Amount of Levy	Amount Collected	Amount Unpaid	Percentage Unpaid
1928	$20,700,455.00	$16,224,573.83	$ 4,475,881.17	21.6%
1929	24,518,343.75	17,780,190.62	6,738,153.13	27.5%
1930	21,725,603.75	13,366,071.38	8,359,532.37	38.5%
1931	18,875,953.75	7,581,446.70	11,294,507.05	60.0%
	$85,820,356.25	$54,952,282.53	$30,868,073.72	36%

The 1931 real estate taxes are payable in two instalments, the second of which will not become delinquent until July 1, 1933. The taxes collected since the time of the last report amount to $9,839,878.05 which is 11% of the taxes levied and due. This money was used to redeem tax anticipation warrants and to pay current expenses.

The non-payment of these taxes has forced the Sanitary District, through lack of revenue, to default in all payments of interest and maturing principal on bonds used for construction work, falling due from January 1, 1932 to June 1, 1933, inclusive. The amounts in default, as of June 19, 1933, are:

Principal	$10,084,500.00
Interest	5,333,328.75
Total	$15,417,828.75

A further default in payment of principal and interest on bonds due July 1, 1933, in the amount of $2,430,802.50 may be expected.

The General Assembly of the State of Illinois, at its 1933 session, passed a bill authorizing The Sanitary District of Chicago to issue bonds without a

referendum in sufficient amount (limited to $100,000,000) to do the work made necessary by the decree of the Supreme Court of April 21, 1930. This bill also provides for the issuance of refunding bonds with which (or the proceeds of which) to take up bonds in default. The Sanitary District still has $7,614,000 of bonds unsold from the issue of $27,000,000 of bonds authorized by the Illinois General Assembly in 1929 in addition to the bulk of $36,000,000 of bonds approved by the voters in February, 1931. All these resources, aggregating about $143,000,000, should be sufficient to carry out the sewage treatment construction program when and if arrangements can be made to realize the money on them.

In view of the fact that the local tax situation is not likely to improve sufficiently for some time in the future to enable the payment of bonds in default and thus make the Sanitary District bonds marketable, the Sanitary District is now taking steps to obtain a loan from the Federal Emergency Administration of Public Works recently created by Congress.

The total work accomplished by the Sanitary District of Chicago in the construction of sewage treatment works during the period from December 1, 1932 (the date of the summaries for the last report) and June 1, 1933 (the date of the summaries for this report), as measured by construction expenditures, was as follows:

TABLE 2.

Calumet Project	$168,217.26
North Side Project	1,143,21
West Side Project	57,898.81
Southwest Side Project	14,897.28
Total	$242,156.56

By adding the various items indicated in Table 2 to corresponding items in Table 1, the completed portion of the sewage treatment construction program on June 1, 1933, is as follows:

TABLE 3.

COMPLETED WORK AS OF JUNE 1, 1933.

Calumet Project	$ 21,030,352.22
North Side Project	37,102,366.63
West Side Project	41,711,735.76
Southwest Side Project	292,508.46
Miscellaneous Plants and Sewers	596,188.86
Chicago River Controlling Works	53,415.74
Total	$100,786,567.67

As previously stated (Page 2 of this report) an estimate of the future cost of sewage treatment construction was submitted to Special Master McClennen in February, 1933, in the amount of $138,575,500. In this estimate no account was taken of the savings possible by the combination of the activated sludge portions of the West and Southwest Side Treatment Plants, because at that time this combination had not been definitely determined upon. Within the past three months, a definite conclusion has been reached to combine these plants on the site already owned by the Sanitary District for the West Side Treatment Plant and its future extension. This combination results in the elimination of the purchase of land, of duplicate blower houses, sludge return pumping stations, air mains, dewatering and incinerating plants and a bridge across the Main Channel. The net result will be a saving in construction costs, now estimated at about $17,000,000. The estimates on the other treatment projects have been reviewed and revised slightly. The whole future sewage treatment program, as re-estimated, was

submitted to the Board of Trustees of The Sanitary District of Chicago on June 15, 1933, and approved by the Board as the future sewage treatment construction program of the Sanitary District. The estimated cost of future sewage treatment construction, based on these estimates, as of June 1, 1933, is, as follows:

TABLE 4.

FUTURE WORK AFTER JUNE 1, 1933.

Calumet Project	$ 14,140,000.00
North Side Project	5,392,500.00
West Side Project	13,138,000.00
West-Southwest Plant	37,650,000.00
Southwest Side Project	44,847,000.00
Miscellaneous Plants and Sewers	2,000,000.00
Chicago River Controlling Works (if necessary)	3,200,000.00
Total	$120,367,500.00

SEWAGE TREATMENT.

The population of The Sanitary District of Chicago, as of July 1, 1933, is about 4,175,000, according to estimates made from the figures of the 1930 census. The industrial wastes in the Sanitary District are assumed as equivalent to 1,717,000 additional persons. Hence, the total population and industrial wastes equivalent amount to 5,892,000. This figure includes the Corn Products wastes, equivalent to the sewage of 378,000 persons, which wastes have been greatly reduced as a result of certain experimental work initiated by the Sanitary District.

The 1933 total population, and industrial waste equivalent, as above indicated, are estimated as 5,892,000. Up to date, the Sanitary District has assumed that sewage treatment could produce an

annual average of 85 per cent purification. Hence, so called complete treatment for the total July 1, 1933, population and industrial wastes equivalent would equal the 100 per cent treatment of the sewage of 5,008,000, which is 85 per cent of 5,892,000.

The expenditures for sewage treatment have been indicated in Tables 1, 3 and 4. The amounts of actual sewage treatment in operation on December 25, 1932 (as of the time of the last report to the Supreme Court) and at the present time are shown in Tables 6 and 7, following:

TABLE 6.

ACTUAL SEWAGE TREATMENT IN OPERATION AS OF DECEMBER 24, 1932.

Treatment Works	Population Equivalent	Percentage Treatment	Treatment 100 Per Cent Basis
Calumet:			
(Complete treatment)	15,000	85	13,000
(Sedimentation)	207,000	33⅓	69,000
North Side	1,083,000	85	921,000
West Side (Sedimentation)..	743,000	33⅓	248,000
Miscellaneous (Morton Grove, Glenview, Northbrook) ...	6,000	85	5,000
Corn Products (Reduction)..	373,000		322,000
Total.....	2,427,000		1,578,000

TABLE 7.

ACTUAL SEWAGE TREATMENT IN OPERATION AS OF JUNE 25, 1933.

Treatment Works	Population Equivalent	Percentage Treatment	Treatment 100 Per Cent Basis
Calumet:			
(Complete treatment)	15,000	85	13,000
(Sedimentation)	210,000	33⅓	70,000
North Side	1,100,000	85	935,000
West Side (Sedimentation)..	750,000	33⅓	250,000
Miscellaneous (Morton Grove, Glenview, Northbrook) ...	6,000	85	5,000
Corn Products (Reduction)..	378,000		322,000
Total.....	2,459,000		1,595,000

The extent of the operation of sewage treatment plants at the present time is equal to the 100 per cent treatment of the sewage of 1,595,000 out of 5,008,000 persons, which would be the present possible 100 per cent treatment if the sewage of the total population and industrial wastes equivalent of 5,892,000 was being treated. This indicates the treatment of 31.4 per cent of the total sewage within the Sanitary District.

DIVERSION OF WATER.

The net diversion of water from Lake Michigan during the calendar year 1932 averaged 6450 cubic feet per second. The domestic pumpage of the Chicago metropolitan area during this period averaged 1650 cubic feet per second; and the total flow from the Main Channel at Lockport averaged 8100 cubic feet per second.

The average monthly diversion of water from Lake Michigan from January 1 to June 20, 1933, is indicated in the table following:

Month 1933	Total Flow from Main Channel at Lockport C.F.S.	Inflow from Willow Springs Spillway C.F.S.	Domestic Pumpage Chicago Metropolitan Area C.F.S.	Net Diversion from Lake Michigan C.F.S.
January	7120	0	1570	5550
February	6820	0	1610	5210
March	7660	0	1585	6075
April	8200	5	1575	6620
May	7745	530	1595	5620*
June 1 to 20	8350	0	1810	6540
Average	7650	90	1625	5935

*Flow reduced account of high water in Illinois River.

All of which is respectfully submitted,

THE SANITARY DISTRICT OF CHICAGO,

By THOMAS J. BOWLER,
Its President.

PHILIP HARRINGTON,
Its Chief Engineer.

WILLIAM ROTHMANN,
Its Attorney.

Attest:

JAMES J. SULLIVAN,
Clerk.